

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2004/051744

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B21C47/12 B21C47/34 B65H54/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B21C B65H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 11, 30 September 1998 (1998-09-30) & JP 10 157927 A (TAKANA DENKI:KK), 16 June 1998 (1998-06-16) | 1,2 |
| X | abstract; figures 1-6 | 8-10 |
| A | EP 1 126 935 A (DANIELI & C OHG SPA) 29 August 2001 (2001-08-29) cited in the application column 3, line 15 - line 52; figures | 1-5, 11, 12 |
| A | US 4 143 834 A (HARA RYOICHI ET AL) 13 March 1979 (1979-03-13) column 2, line 38 - line 51 column 3, line 30 - line 50; figures 5,8 | 1,4,5,8, 11,12 |
| | -/- | |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

8 December 2004

Date of mailing of the international search report

21/12/2004

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | DE 12 67 507 B (ELEKTRO APP WERKE BERLIN TREPT) 2 May 1968 (1968-05-02) column 3, line 61 - column 4, line 7 column 4, line 29 - line 38; figures 1,2 ----- | 1,4,8-10 |
| A | DE 33 06 579 A (BECKER PRUENTE GMBH) 30 August 1984 (1984-08-30) claim 1; figures 1,2 ----- | 6 |
| A | PATENT ABSTRACTS OF JAPAN vol. 0176, no. 82 (M-1528), 14 December 1993 (1993-12-14) & JP 5 229733 A (FURUKAWA ELECTRIC CO LTD:THE), 7 September 1993 (1993-09-07) abstract; figures 1,4 ----- | 1,5,11 |
| A | US 3 507 458 A (WHITE WILLIAM R ET AL) 21 April 1970 (1970-04-21) column 2, line 11 - line 21; figure ----- | 1,8 |
| A | DE 821 666 C (SIEMENS SCHUCKERTWERKE) 19 November 1951 (1951-11-19) figure 1 ----- | 1,8 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/051744

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|--|--|
| JP 10157927 | A | 16-06-1998 | NONE | |
| EP 1126935 | A | 29-08-2001 | IT 1302793 B1 AT 233617 T AU 6226099 A DE 69905744 D1 DE 69905744 T2 EP 1126935 A1 ES 2190256 T3 WO 0025952 A1 US 6332583 B1 | 29-09-2000 15-03-2003 22-05-2000 10-04-2003 16-10-2003 29-08-2001 16-07-2003 11-05-2000 25-12-2001 |
| US 4143834 | A | 13-03-1979 | JP 52102961 A JP 1223881 C JP 52102962 A JP 58049471 B DE 2704122 A1 DE 2759301 B1 FR 2357462 A1 US 4143833 A US 4179083 A | 29-08-1977 15-08-1984 29-08-1977 04-11-1983 15-09-1977 16-08-1979 03-02-1978 13-03-1979 18-12-1979 |
| DE 1267507 | B | 02-05-1968 | NONE | |
| DE 3306579 | A | 30-08-1984 | DE 3306579 A1 | 30-08-1984 |
| JP 5229733 | A | 07-09-1993 | NONE | |
| US 3507458 | A | 21-04-1970 | NONE | |
| DE 821666 | C | | NONE | |

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